

Frankie

"Some Electrical Measurements of
One of Mr. Edison's
Horseshoe lamps."
"by Henry Morton, Ph.D.,
Alfred M. Mayer, Ph.D.,
and B. F. Thomas, A.M.,
at Stevens Institute of
Technology"

Sci. Amer. Sept. 17, 1880.

Resistance	Condition
123 ohms	Blow
94 "	Cold
83.7 ..	Orange light
79.4 ..	9 candle
75 ..	10 "
75 ..	5 "
75 ..	1.8 ..

This was investigated
face candle-power.
I note conclusion
perhaps? But perhaps
too incisive.

Edison Bristol -
board 8 c.p. fil-
ament before
carbonizing.
0.07868 sq. inches,
and after carbon-
izing 0.0423 sq.
in.

160. p. heat
face surface of
0.054 sq. in. after
carbonizing. After
carbonizing 0.0477
average c.p. one.
avg. resistance is
0.6366 of the sum
of face and edge
value in ohm
resistance.

This was a sample of
Edison's Pat. 317,676

160. p. filament
3 inches long after
carbonizing

8 c.p. filament
1.9 inches long after
carbonizing

page 78.
much
much
"Blown
in 95 to
abolished
possible
desired
100. "
wattage
- until 1874.
changed
life in
; becomes
sample of
watt.

normal
Cand. was
in there
there
about
200 hours."

ts.
6 c.p. - about
watts - in
paper

100 volts - then carbon
plasterous and brittle - paper
carbons - Pat. 317,676 -

Report to Sheldon, Oct. 20/902.
S. S. Columbia - 3-100 w. generators,
rated each at 60. 16 c.p. lamps. Had
a separate exciter. Lamps suspended
from the wires, as were too fragile for
rigid support.

rated by face c.p. .

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"Some Electrical
Measurements of
One of Mr. Edison's
Horseshoe lamps."
"By Henry Morton, Ph.D.,
Alfred M. Mayer, Ph.D.,
and B. F. Thomas A.M.,
at Stevens Institute of
Technology."

Sci. Amer. Sept. 17, 1880.

Resistance	Condition
123 ohms	Blow
94 "	Cold
83.7 ..	Orange light
79.8 ..	$\frac{9}{10}$ candle
75 ..	5 ..
	18 ..

This was longitudinal
face candle-power.
I note conclusion
perhaps? But perhaps
too incisive.

Edison briar -
board 3 c.p. fil-
ament before
carbonizing.
0.07868 sq. inches
and after carbon-
izing 0.0423 sq.
in.

160.70. lead
face surface of
0.054 sq. in. after
carbonizing
Thickness after
carbonizing 0.00477
average C.P. are.
my conclusion is
0.6366 of the sum
of face and edge
value in star
meridians.

This was a Sawyer's
Edison but b 17, x 36

160.7 filament
3 inches long after
carbonizing

80.7 filament
1.9 inches long after
carbonizing

Edison Lamp factory
at Meado, Oct. 1/80 to
May 1/82. W.S. Andrews,
in "Edisonia", page 163.

Edison Lamp factory
at Meado. First
regular payroll \$8.
"Edison Lamp Co." was
Nov. 135 → Nov. 11, 1880. Moving
hands 135
Brought to Harrison commenced
April 1, 1882, which was
in stock
started June 1, 1882, with
150 hands employed.
W.V. Seeler, "Edisonia",
pp. 139-140.

Moving Lamp factory to
Harrison began in Feb.
1882, and mfg. began
there in April. H. W. Mean,
Lamp, Howard & Schröder,
page 65.

Pictures of B.S.S. Columbia
and Hinds, Ketcham & Co.
page 63

Note: This great
voltage variation
exists in the earlier
years, 1880-5

Howell and Schroeder -
Hist. Incandescent Lamp, page 78.

Filaments (bamboo) varied much
in required voltage, as much
as 15 to 20 percent; so that "Blends"
operating all the way from 95 to
125 volts were thus established
all because it was impossible
to make all lamps of the desired
voltage which was 100.
This was due to diff. in percentage
or cutting inaccuracies.

Bamboo used by Edison until 1874.
Page 77.

Page 65. Lamps 8 per h.p. - changed
late in 1881 to 10 per h.p. - life in
both cases 600 hours.

Page 83. Lamps of 1881 gave 1.68 lumens
per watt. The carbon lamp of
1806 gave 3.4 lumens per watt.

Edisonia, page 103, "The normal
life of the paper horsehair lamp was
about 300 hours, although there
were several instances of these
lamps continuing in use about
Meals Park upward of 1000 hours."

W. T. Hammer.

Edisonia, page 133, W. V. Jenkins.
S. S. Columbia. 115 lamps - 16 c.p. - about
100 volts - then called "A" lamps - in
slaterous and brick saloons - Paper
carbons - Pat. 317,676.

Report to Sheldon, Oct. 20 1902.

S. S. Columbia 3-100 w. generators
rated each at 50, 16 c.p. lamps. Had
a separate exciter. Lamps suspended
from the wires, as were too fragile for
rigid support.

[Resis. cold 123 Runs]

-114 Resist.
-111 amp.

-114

-12.6 540025 C.P. = 0

12.654

12.654

12.654 1.404594 Wath

-112 R

-129 C

1008

224

112

-14.448 V.

.129

130032

13896

14448

1863792 W.

-164 R

-111 R

.164 C

444

168

18204 V.

18204

72816

10924

18204

2.985456 W

-106 R

.239 C

318

212

25.334 V.

.239

228006

576002

50668

6054826 W

-114 Resist.

-111 amp.

-114

12.654

12.654

12.654

1.404594 Wath

-112 R

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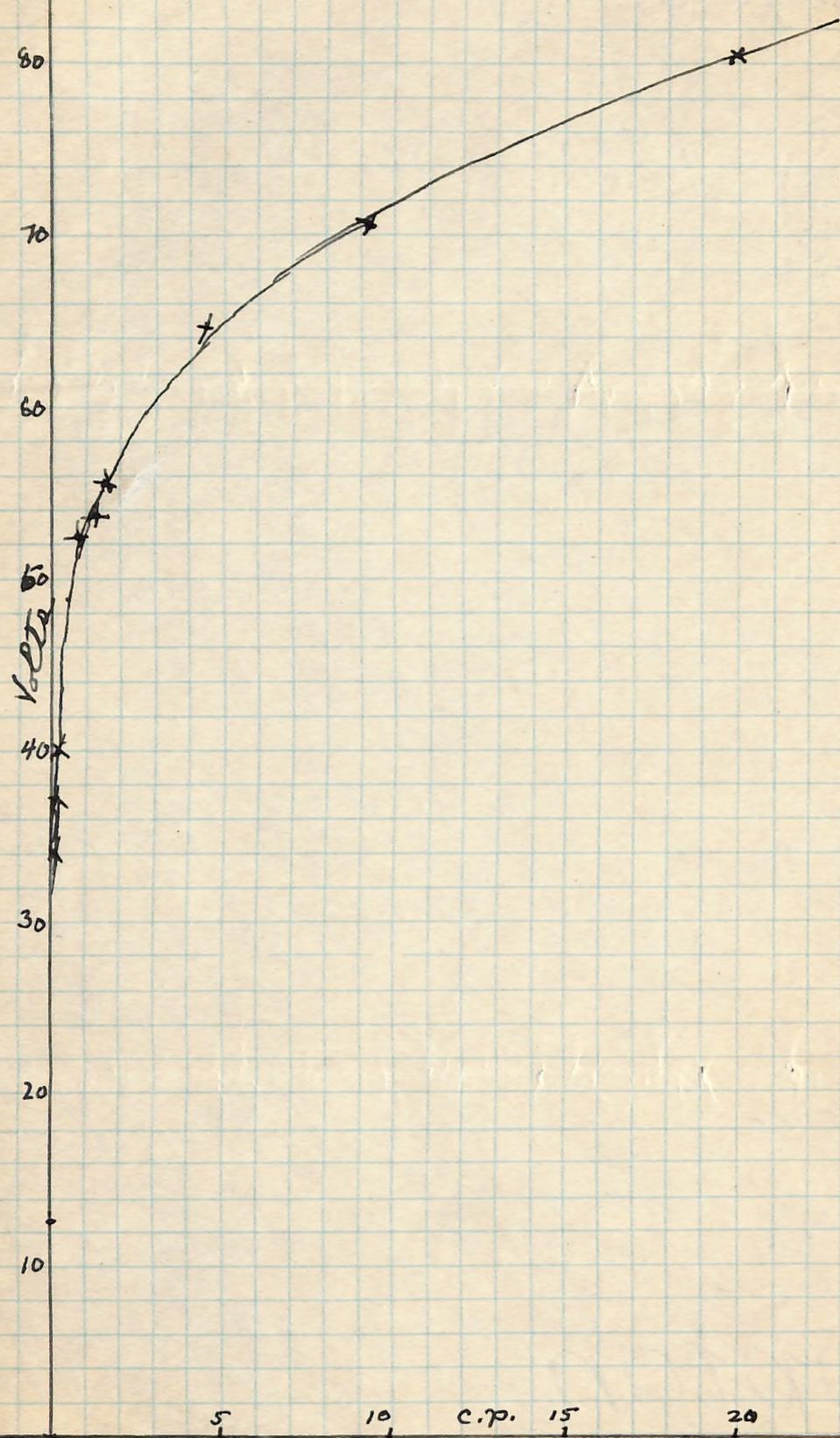
By Prof. Morton's tests.

Volts	Ohms	Amperes	Watts	Maximum horizontal Candle Power
0	123	0	0	0
12.654	114	.111	1.405	0
14.448	112	.129	1.86 14	Just visible
18.204	111	.164	2.985	Dusky red
25.334	106	.239	6.055	Cherry red
33.934	94	.361	12.250	,016
40.050	90	.445	17.822	10 10 .10
48.783	84.4	.578	28.197	10 50 .50
52.584	84	.626	32.968	10 83 .83
53.728	83.3	.645	34.655	1.10
55.440	82.5	.672	37.256	1.5
64.880	80	.811	52.618	4.5
70.461	77.6	.908	63.978	9.2
80.386	74.5	1.079	86.736	20.0

another set of readings gave (page 5):

C.P.	Ohms
0	123 cold
0	113.5
Dark red	106
0.1	94
0.2	89
0.4	87
0.9	83.7
1.9	82
5.1	79.8
8.4	78
18.	75

Having all average C.P. = 69% of maximum
By measuring maximum candle-power
with the two candle-power
10° apart, making angles
to all the two red with the two
across to horizontal appear
to 69% to be maximum
face candle-power.



Copy

Data from lamps as now manufactured

Type	length fibres	Thickness of loop fibres in place	Width of loop fibres	Crush power	Width middle fibres	Resistance Shear	Current amps	E. I. S. F. ft. lbs.	per min.
A	6"	.0065"	.027"	32	86	1.18	1.02	5332	
A	6"	.008"	.0135"	16	137	.745	102	3366	
A	6 1/2"	.00775"	.01425"	16	140	.747	105	3475	
A	6 1/2"	.008"	.017"	16	121	.828	100	3665	
A	6 1/2"	.008"	.019"	16	103	.92	95	3880	
A	6"	.0065"	.00925"	10	208	.49	102	2217	
B	3"	.008"	.0135"	8	69	.745	51	1683	
B	3"	.0065"	.027"	16	42	1.2	51	2715	

Aug 19-1883.

According to "Some Measurements of the Size of Men."

Edouard Horseshoe Lampes.

by Morton, Mayer and Thomas, &
The Stevens Inst. of Tech.,
S. A. 17 ^{Vol. 42} 1898.

See Amer. Jour., 17, 1860.
the lamp at 15 incandescent candles
with filament loop at right-angles to
axis of photometer had resistance of 76
ohms (123 ohms cold). A Grove battery operated
it, and requiring at 16 candles at end of one
hour gave 14 candles with change of weight in
a copper-copper-nickelate electrolyte and a
1.7736 grammes, indicated average current of
0.905 amperes. Thus 62.24 mtrs. total for average 15 C.P.

The "A" Bristol-board filament, after carbonizing, had a face surface of 0.054 sq. in. - thickness 0.00477 inch.

In 1881 the "A" lambs
were 16a-p and 1102.
The "B" lambs were 8c.p.
and 55 m. The "A" lamb
lambing about 93 matts.
Hoover & Schroeder book;
P. 65.

115 "A" lamps
were installed
in S.S. Columbia

Harper's Weekly

Jan. 3, 1880,

Scirurus Mysorensis

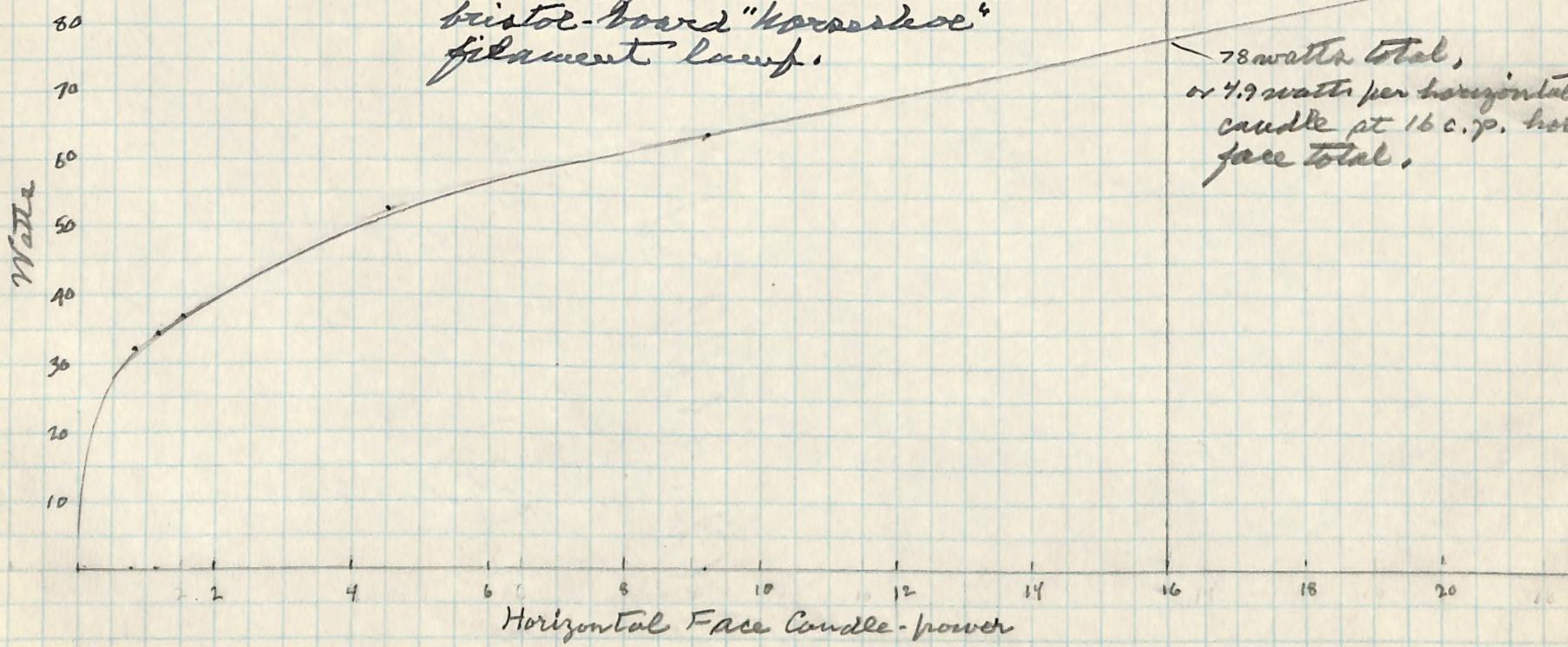
Feb. 14645.

Shroeder: Was not c. p. in
early larva, 1881-83,
noted by face c. p.?

Edison Horseshoe Lamp

The bulb was blown from 1 inch lead-glass tubing, which is the size of the bulb-neck. The stem through which the conducting wires were sealed and served to support the filament burner was made from $3/8$ inch tubing, and extends downward about $1\frac{3}{4}$ inches into the wooden stand. The total height of such lamps averaged about $6\frac{1}{4}$ inches from top of bulb-tip to lower end of stem.

An exact-size outline drawing of the lamp was pub. ~~with~~ in an article on "Edison's Electric Light" by Francis R. Upton, Scribner's Monthly, Feb., 1880. This article was authorized by Edison, and bears his endorsement?



78 watts total,
or 4.9 watts per horizontal face-
candle at 16 c.p. horizontal
face total.